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SPECIFICATION FOR DOBBY LAGS AND PEGS

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BUREAU OF INDIAN STANDARDS
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI 110002

Gr 3

May 1966

Indian Standard

SPECIFICATION FOR DOBBY LAGS AND PEGS

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MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI 110002

Indian Standard

SPECIFICATION FOR DOBBY LAGS AND PEGS

0. FOREWORD

0.1 This Indian Standard was adopted by the Indian Standards Institution on 6 March 1966, after the draft finalized by the Textile Mill Accessories (Other than Jute) Sectional Committee had been approved by the Textile Division Council.

0.2 In the formulation of this standard, due weightage has been given to international co-ordination among the standards and practices prevailing in different countries in addition to relating it to the practices in the field in this country. This has been met by deriving assistance from Draft ISO Recommendation No. 710 'Dobby lags and pegs, in wood, metal or other suitable materials' [Doc : ISO/TC 72(Secretariat—183)238 E] circulated by the International Organization for Standardization.

0.3 This standard covers dobby lags and pegs made of wood. Metal or plastic lags and pegs have not been included, as at present they are not being manufactured in the country. However, when such dobby lags and pegs are manufactured indigenously, the Committee would consider including their requirements also.

0.4 This standard contains clauses which call for agreement between the buyer and the seller (*see* **3.1.2, 3.1.3, 3.3.1** and **7.3**).

0.5 For the purpose of deciding whether a particular requirement of this standard is complied with, the final values, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS : 2-1960*. The number of significant places retained in the rounded off values should be the same as that of the specified values in this standard.

1. SCOPE

1.1 This standard prescribes requirements of dobby lags with two lines of peg holes and pegs.

2. TERMINOLOGY

2.0 For the purpose of this standard, the following definitions shall apply.

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*Rules for rounding off numerical values (*revised*).

AMENDMENT NO. 2 FEBRUARY 1974
TO
IS : 3496-1966 SPECIFICATION FOR DOBBY LAGS AND PEGS

Addendum

[*Page* 3, *clause* 3.3.1 (*see* Amendment No. 1)] — Add the following species of timber at the end under the respective columns:

TRADE NAME	BOTANICAL NAME
Boxwood	*Buxus sempervirens* Linn.

(TDC 19)

Reprography Unit, BIS, New Delhi, India

AMENDMENT NO. 1 APRIL 1970

TO

IS : 3496-1966 SPECIFICATION FOR DOBBY LAGS AND PEGS

The standard prescribes cornel and hornbeam species of timber for the manufacture of lags and pegs. Since the Government of India has banned the import of timbers for the manufacture of textile mill accessories, the Forest Research Institute and Colleges (FRI), Dehra Dun, suggested that certain indigenous species of timber were as good as cornel and hornbeam for the purpose. With a view to assessing the suitability of these timbers, dobby lags and pegs made of indigenous timber were tried in certain cotton textile mills in collaboration with FRI and it was found that certain indigenous timbers were as good as cornel and hornbeam. This amendment is, therefore, being issued to replace the foreign timbers by the indigenous ones which have been found quite successful during the course of performance trials. This opportunity has also been taken to prescribe the lags made of indigenous timbers to be used in conjunction with metal pegs which are also in use by certain textile mills.

Alteration

(*Page* 3, *clause* **3.3.1**) — Substitute the following for the existing clause and re-number the subsequent clauses accordingly:

'**3.3.1** *Lags* — The lags shall be manufactured from well-seasoned timber of any of the following species as agreed to between the buyer and the seller:

TRADE NAME	BOTANICAL NAME
Gardenia	*Gardenia* Sp.
Maple	*Acer* Sp.
Oak	*Quercus* Sp.
Parrotia	*Parrotiopsis jacquemontiana*
Rosewood	*Dalbergia latifolia* Roxb.
Sandan	*Ougeinia oojeinensis* (Roxb.) Hochreut
White Cedar	*Dysoxylum malabaricum* Bedd.

3.3.2 *Pegs* — The pegs shall be manufactured from well-seasoned timber of any of the following species as agreed to between the buyer and the seller:

TRADE NAME	BOTANICAL NAME
Boxwood	*Buxus semperirens* Linn.
Oak	*Quercus* Sp.
Parrotia	*Parrotiopsis jacquemontiana*
Rosewood	*Dalbergia latifolia* Roxb.

3.3.3 *Lags in Conjunction with Metal Pegs* — The lags which are intended to be used in conjunction with metal pegs shall be manufactured from well-seasoned timber of any of the following species as agreed to between the buyer and the seller:

TRADE NAME	BOTANICAL NAME
Boxwood	*Buxus semperirens* Linn.
Ebony	*Diospyros* Sp.
Gardenia	*Gardenia* Sp.
Oak	*Quercus* Sp.
Parrotia	*Parrotiopsis jacquemontiana*
Sandan	*Ougeinia oojeinensis* (Roxb.) Hochreut'

(TDC 19)

Reprography Unit, BIS, New Delhi, India

2.1 Lift of Peg — Length of the head of the peg (*M* in Fig. 2).

2.2 Pitch of Lag — Distance between the centres of two successive peg holes in one line of holes on the lag (*A* in Fig. 1).

2.3 Pitch of Lattice — Centre to centre distance between two adjacent lags in a lattice (*K* in Fig. 1).

3. GENERAL REQUIREMENTS

3.1 General Design and Workmanship — The lags and pegs shall be generally as illustrated in Fig. 1 and 2, respectively. They shall have smooth finish. Each lag shall be fixed with two staples on each of its longitudinal sides as shown in the figure. However, in the case of lags to be used on dobbies having 24 or more jacks, an additional staple in the middle shall be provided.

3.1.1 To form a lattice, required number of lags shall be linked together, in the form of a chain, by means of wire rings threaded through the staples at the sides of the lags.

3.1.2 The lags shall be either grooved (*see* Fig. 1A) or plain (*see* Fig. 1B) as agreed to between the buyer and the seller.

3.1.3 The pegs shall be either bat-shaped (*see* Fig. 2A) or tapered (*see* Fig. 2B) as agreed to between the buyer and the seller.

NOTE — Generally, bat-shaped pegs are used in conjunction with grooved lags, and tapered pegs are used in conjunction with plain lags.

3.2 Freedom from Defects — The lags and pegs shall be free from knots, splits, honeycombing, cracks, gum veins, bark pocket, insect damage, rind galls, worm holes, any sign of decay, and any other defect which is likely to affect the life or usefulness of the lags and pegs.

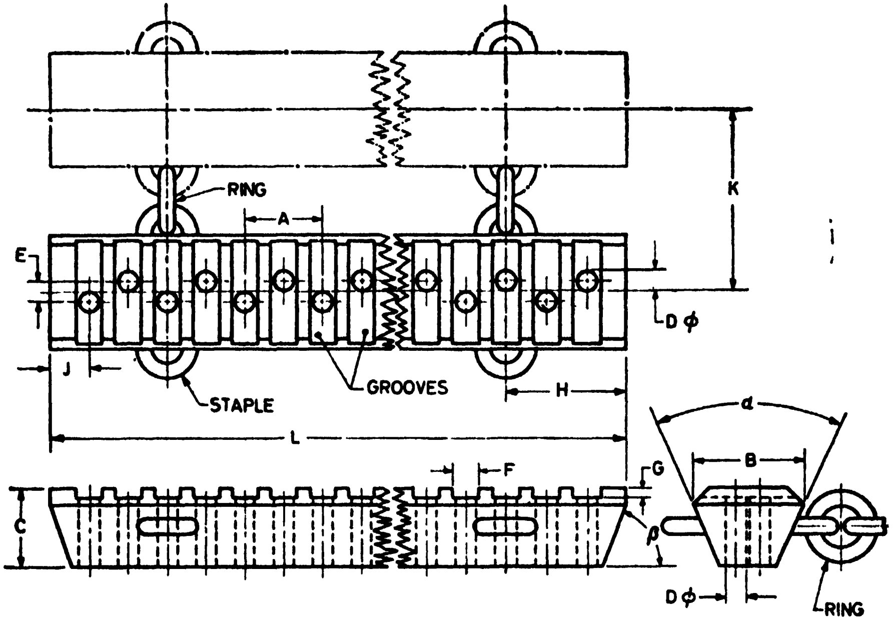
NOTE — The different types of defects are described in Appendix A.

3.3 Material

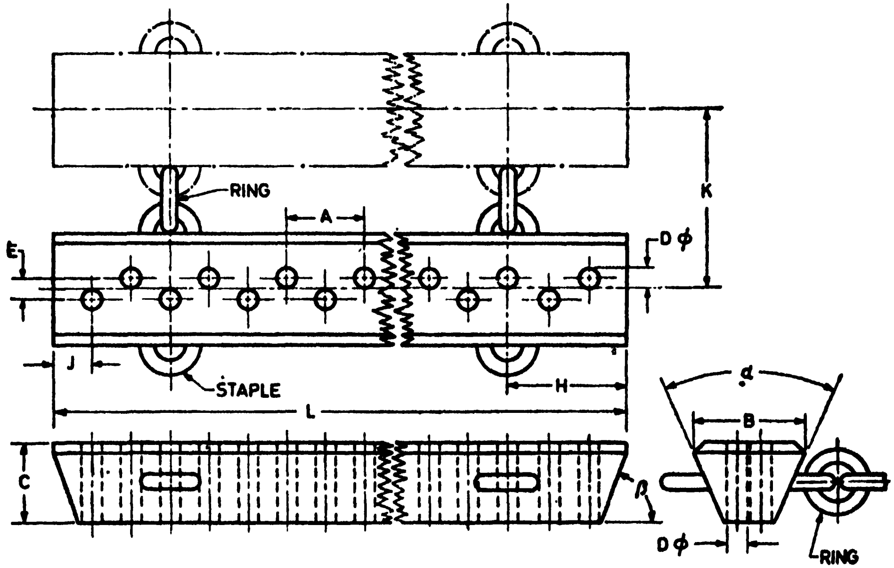
3.3.1 *Lags and Pegs* — The lags and pegs shall be manufactured from well-seasoned timber of any of the following species, as agreed to between the buyer and the seller:

TRADE NAME	BOTANICAL NAME
Cornel	*Cornus florida* Linn.
Hornbeam	*Corpinus betuls*
Parrotia	*Parrotiopsis jacquemontiana*

3.3.1.1 The blanks of timber used in the manufacture of lags and pegs shall be straight grained. However, a slope of grain up to 1 in 16 shall be permitted.

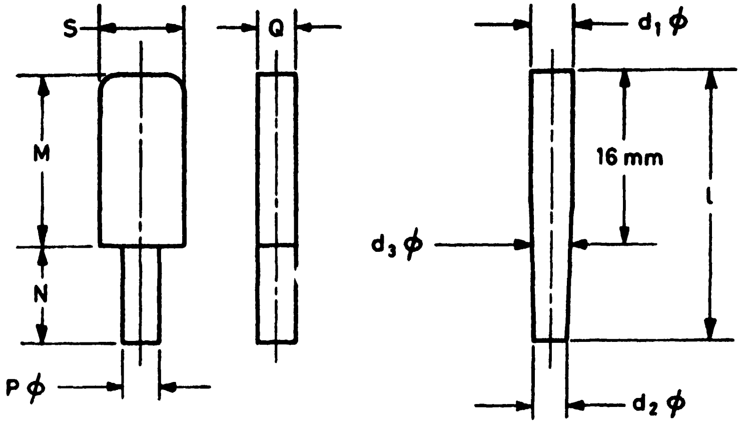


1A Grooved Lag



1B Plain Lag

Fig. 1 Lags



2A Bat-Shaped Peg 2B Tapered Peg

Fig. 2 Pegs

3.3.2 *Staples* — The staples used in the lags shall be manufactured from copper plated steel wire of 2·50 mm diameter (or 13 SWG).

3.3.3 *Rings* — The rings used to link the lags to form a lattice shall be manufactured from copper plated steel wire of 2·50 mm diameter (or 13 SWG).

4. SPECIFIC REQUIREMENTS

4.1 Dimensions

4.1.1 *Lags (Grooved and Plain)* — The dimensions of grooved and plain lags shall conform to the requirements of Table 1 when read with Fig. 1.

4.1.2 *Pegs (Bat-Shaped)* — The dimensions of bat-shaped pegs shall conform to the requirements of Table 2 when read with Fig. 2A.

4.1.3 *Pegs (Tapered)* — The dimensions of tapered pegs shall conform to the requirements of Table 3 when read with Fig. 2B.

5. MARKING

5.1 Lags — Each lag shall be marked at an appropriate place with the following:

a) Number of peg holes in a line; and

b) Manufacturer's name, initials or trade-mark.

TABLE 1 DIMENSIONS OF GROOVED AND PLAIN LAGS

(*Clause* 4.1.1)

All dimensions in millimetres.

	Dimension	Minimum	Maximum
A	Pitch of lag	11·94	12·00
B	Width at the top	17·0	17·5
C	Thickness of lag	11·1	12·0
D	Diameter of peg hole	3·2	3·3
E	Distance between two lines of peg holes	3·0	3·3
**F*	Width of groove	3·8	4·0
**G*	Depth of groove	1·0	1·6
H	Distance from the centre of staples to the corresponding end of lag	18	—
J	Distance from first and last holes to the corresponding end of lag	6	—
α		46°	48°
*β		66°	70°
K	Pitch of lattice	$28{\cdot}0^{+0{\cdot}3}_{-0{\cdot}2}$	
L	Overall length of lag	12 × Number of jacks $-\frac{1}{2}A+2J$	

*Applicable only in the case of grooved lags.

TABLE 2 DIMENSIONS OF BAT-SHAPED PEGS

(*Clause* 4.1.2)

All dimensions in millimetres.

	Dimension	Minimum	Maximum
M	Lift of peg	15·0	16·0
N	Length of shank of peg	8·7	9·0
P	Diameter of shank of peg	3·4	3·5
Q	Thickness of peg	3·4	3·6
S	Width of peg	7·5	8·0

TABLE 3 DIMENSIONS OF TAPERED PEGS

(*Clause* 4.1.3)

All dimensions in millimetres.

	Dimension	Minimum	Maximum
d_1	Diameter at the top of peg	3·8	3·9
d_2	Diameter at the bottom of peg	3·0	3·1
l	Overall length of peg	23·7	25·0
*d_3	Diameter at a point 16 mm below the top	3·4	3·5

*This has been specified to ensure the lift of peg to be between 15 mm (minimum) and 16 mm (maximum).

5.2 Pegs — Each bag (*see* **6.2**) of pegs shall be marked with the following:

a) Number of pegs in the bag;

b) Type of pegs, that is, bat-shaped or tapered; and

c) Manufacturer's name, initials or trade-mark.

5.3 Lags and bags of pegs may also be marked with the ISI Certification Mark.

NOTE — The use of the ISI Certification Mark is governed by the provisions of the Indian Standards Institution (Certification Marks) Act, and the Rules and Regulations made thereunder. Presence of this mark on products covered by an Indian Standard conveys the assurance that they have been produced to comply with the requirements of that standard, under a well-defined system of inspection, testing and quality control during production. This system, which is devised and supervised by ISI and operated by the producer, has the further safeguard that the products as actually marketed are continuously checked by ISI for conformity to the standard. Details of conditions, under which a licence for the use of the ISI Certification Mark may be granted to manufacturers or processors, may be obtained from the Indian Standards Institution.

6. PACKING

6.1 Lags shall be supplied in the form of lattices, each containing 100 lags. Two hundred and fifty lattices so formed shall be first wrapped in waterproof paper and then in hessian cloth to form a bundle. The hessian cloth shall be sewn with two-ply jute twine of adequate strength.

6.1.1 Each bundle shall bear the following information:

a) The number of lags in the bundle;

b) Type of lags, that is, grooved or plain; and

c) Manufacturer's name, initials or trade-mark.

6.2 Five thousand pegs shall be packed in a cloth bag (*see also* **5.2**).

7. SAMPLING

7.1 Lot — The quantity of lags or pegs of one type and manufactured from one species of timber supplied to a buyer against one despatch note shall constitute a lot.

7.2 The conformity of the lot to the requirements of this standard shall be judged on the basis of the tests carried out on the samples selected from it.

7.3 Unless otherwise agreed to between the buyer and the seller the number of lattices or pegs to be selected at random shall be according to col 1 and 2 of Tables 4 and 5 respectively.

7.4 From each of the lattices selected according to **7.3**, ten lags shall be selected at random and tested for all the requirements except dimension *K*.

TABLE 4 SAMPLE SIZE AND PERMISSIBLE NUMBER OF NON-CONFORMING LAGS

(*Clauses* 7.3, 7.5 *and* 7.7)

NUMBER OF LATTICES IN THE LOT (1)	NUMBER OF LATTICES TO BE SELECTED (2)	NUMBER OF LAGS TO BE TESTED (3)	PERMISSIBLE NUMBER OF NON-CONFORMING LAGS (4)	NUMBER OF LATTICES TO BE SELECTED FOR TESTING DIMENSION *K* (5)
Up to 15	3	30	1	3
16 „ 25	5	50	2	4
26 „ 100	8	80	3	5
101 „ 300	13	130	5	7
301 and over	20	200	7	8

TABLE 5 SAMPLE SIZE AND PERMISSIBLE NUMBER OF NON-CONFORMING PEGS

(*Clauses* 7.3 *and* 7.8)

NUMBER OF PEGS IN THE LOT (1)	NUMBER OF PEGS TO BE SELECTED FOR TESTING (2)	PERMISSIBLE NUMBER OF NON-CONFORMING PEGS (3)
Up to 3 000	80	7
3 001 „ 10 000	125	10
10 001 „ 35 000	200	14
35 001 and over	315	21

7.5 The number of lattices to be selected at random for evaluating dimension *K* shall be according to col 5 of Table 4. From each of the lattices thus obtained five pairs of adjacent lags shall be selected at random and the dimension *K* evaluated for each of the pairs.

7.6 The pegs selected according to **7.3** shall be tested for all the specified requirements.

7.7 Criteria for Conformity for Lot of Lags — The lot shall be considered in conformity with the requirements of this standard if the following conditions are satisfied:

a) the number of lags tested according to **7.4** and found non-conforming in respect of any one or more of the characteristics does not exceed the corresponding number given in col 4 of Table 4.

b) From the observed values of dimension K in respect of each lattice, the average value of dimension K and the range shall be calculated. From all such average values and range values, the grand average $\bar{\bar{X}}$ and the average range $\bar{R}$ respectively shall be calculated and the values of the expression $\bar{\bar{X}} - 0{\cdot}6\ \bar{R}$ and $\bar{\bar{X}} + 0{\cdot}6\ \bar{R}$ lie within the specified limits.

NOTE 1 — The average value of dimension K for each lattice is obtained by dividing the sum of the observed values by the number of observed values corresponding to the lattice. The grand average $\bar{\bar{X}}$ is obtained by dividing the sum of these average values by the number of lattices tested.

NOTE 2 — The range R for each lattice is the difference between the maximum and minimum of the observations corresponding to the lattice. The average range $\bar{R}$ is obtained by dividing the sum of these range values by the number of lattices.

7.8 Criteria for Conformity for Lot of Pegs — The lot shall be considered conforming to the requirements of this standard if the number of pegs found non-conforming does not exceed the corresponding number given in col 3 of Table 5.

8. METHODS OF TEST

8.1 The conformity of the legs and pegs to the requirements of **3.1** and **3.2** shall be adjudged visually and tactually and those of **4.1** by means of suitable measuring scales and gauges.

APPENDIX A

(*Note under Clause* 3.2)

DEFECTS IN TIMBER

A-1. LIST OF DEFECTS IN TIMBER

A-1.1 Bark Pocket — a defect in timber in which the bark is wholly or partially embedded in the wood.

A-1.2 Check or Crack — a separation of fibres which is confined to one face of a piece of wood and runs along the grain of piece.

A-1.3 Gum Vein — an accumulation of gum resin in the form of a vein or ribbon between the growth rings. It may be broken at intervals by wood tissues.

A-1.4 Honeycombing — checks in the interior of wood, not seen on the surface.

A-1.5 Knot — a section through a branch embedded in the trunk of a tree due to the natural growth.

A-1.6 Rind Galls — surface wounds, as from torn-off branches, covered by later growth.

A-1.7 Split — a separation of fibres which extends from one face of a piece of wood to another and runs along the grain of the piece.

A-1.8 Worm-holes — the holes formed by wood-boring larvae.

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